* Each of the major scientists, their experiment, their contribution to molecular biology
* Structure of DNA and RNA
  + Direction, components, differences and similarities between the two, reads/builds, 5’ and 3’ ends, antiparallel, H-bonding, nucleotide/nucleoside,
  + Types of RNA – job of each, structure/shape of each, where they are in cell
  + Chromatin, histones, nuceleosome, euchromatin, heterochromatin
* Differences and similarities in terms of genetic structure and protein formation of Prokaryotes and Eukaryotes
* Role mutations and play in each of the below processes
  + Examples of each and Types of Mutations
  + Causes of mutation
    - Mutagens/carcinogens
* Replication
  + Current model as well as past models and how they differ
  + The processes
  + The purpose
  + Leading strand, lagging strand/Okazaki fragments, Origins of Replication, replication fork
  + Enzymes involved/job of each enzyme
    - Helicase, telomerase, primase, polymerase(more than one), ligase, topoisomerase, hydrolase, nuclease
  + Recognize/complete complementary strands of DNA/RNA if given a strand
* Telomeres
* One-Gene-One-Polypeptide theory
* Transcription
  + The process-3 steps
  + Enzymes involved/job of each enzyme
    - Transcription factors, GTP, Poly A, exons, introns, snRNPs
  + The purpose
* Translation
  + The process
    - Initiation, elongation, termination
  + Components involved/Job of each
    - rRNA, tRNA, mRNA
  + The purpose
  + Codon purpose/use, anticodon
  + Ribosomal structure
    - P, A, E site
    - GTP, polyribosome
* Protein shapes and functions
* Viruses and Retrovirsus
  + Structure
  + Living or Nonliving?
  + Lytic, Lysogenic
  + Provirus, Temperate virus, phage, bacteriophage
  + Genome replication in viruses
  + HIV
* Bacteria
  + Endomembranes, plasmids, F plasmid, R Plasmid, Toxins, Asexual and sexual reproduction, pillus
  + Conjugation, transformation, transduction
  + Transposons, episome
* Reverse Transcription
  + The process
  + Components involved/job of each
  + The purpose
* Gene expression
  + Promote, regulatory, operator, structural gene
  + Lac operon and TRP Operon
    - Inducer, repressor
  + Methylation, histone acetylation, siRNA,
* Key Vocabulary to know/be able to use:
  + cistron, the versions of caps and tails on the genetic codes, noncoding regions, essential amino acids, host, vector, restriction enzyme, Splicesome
* Genetic Engineering
  + Recombinant DNA, Vaccination, Cloning, PCR, Electrophoresis, GMO, pharmaceutical purposes, stem cells, DNA splicing
* Environmental factors that can influence genetic traits